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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/730,011	12/05/2000	Richard Vandervoort Cox	1999-0767A	6590

7590 12/31/2003  
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EXAMINER

TRAN, VINCENT V

ART UNIT	PAPER NUMBER
2655	8

DATE MAILED: 12/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/730,011

Applicant(s)

COX ET AL.

Examiner

vincent v tran

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2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 05 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claims 1 and 3 are objected to because of the following informalities:

The word "decoding" in claim 1 line 9 is a misused word. It should be replaced with - recognizing speech -.

The symbols in claims 1 and 3 are undefined.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cong et al. (U.S. Patent No. 6,044,343) in view of Li et al. (U.S. Patent No. 5,704,004).

Referring to claim 1, Cong et al. disclose a method of "decoding" (speech recognition), the method comprising the steps of:

computing the probability of a correct observation sequence  $P(O|\lambda)$

(O is an observation sequence and  $\lambda$  is a HMM process, col.5, ln.1-2 and col.11, ln.27-28); and

recognizing speech with a standard hidden Markov model process (col.12, ln.54-67).

Cong et al. do not specifically disclose a method for detecting an erased frame; and deleting a frame based on thresholding its parameter values.

However, Li et al. teach a method for defining a steady-state threshold T (col.6, ln.1-9, the same as detecting an erased frame); and

deleting the frame vector based on a fixed threshold value (col.6, ln.7-9).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention to modify the method of Cong et al. by generating a new and shorter sequence of error-free vector in order to save system processing time as taught by Li et al. (col.1, ln.34-36). In particular it would have been obvious to one having ordinary skill in the art at the time invention to delete a frame with errors which satisfies such a threshold condition since this threshold condition has determined that the frame is redundant.

Referring to claim 2, Cong et al. further disclose the method for measuring the Euclidean distance between the line spectrum pairs (LSPs) of contiguous frames (col.2, ln.63-66 and col.6, ln.5-7). But

Cong et al. with do not specifically disclose defining a steady-state threshold T; and deleting one frame of the contiguous frames when the Euclidean distance is less than the threshold.

However Li et al. teach a method of a speech recognition, wherein the following steps are performed:

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defining a steady-state (stable portion) threshold T (col.6, ln.1-9); and deleting one frame of the contiguous frames when the Euclidean distance is less than the threshold (col.6, ln.7-9).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention to modify the method of Cong et al. which able to delete a frame based on predetermined threshold for the LSP data in order to reduce the amount of data time needed to do speech recognition processing as taught by Li et al. (col.1, ln.36-40).

Referring to claim 3, Cong et al. further disclose the method, wherein the following relation is used to define the Euclidean distance for LSP coefficients

$$\sum_{i=1}^p (\omega_{n,i} - \omega_{n-1,i})^2$$

(col.9, ln.60 – col.10, ln.5).

4. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cong et al. (U.S. Patent No. 6,044,343) in view of Li et al. (U.S. Patent No. 5,704,004) as applied to claim 1 and further in view of Maeda (U.S. Patent No. 6,230,124).

Referring to claim 4, the combination of Cong et al. with Li et al. does not specifically disclose a method, wherein in detecting a frame erasure, an erasure is declared when the bits most sensitive to error within a frame are determined to be in error.

However Maeda teaches detecting an error by check code created from the important bits (col.2, ln.9 and 58-61)

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention to modify the method of Cong et al. in view of Li et al. to detect a frame erasure based on such error bits in order to improve the audio quality as taught by Maeda against the transmission path error (col.1, ln.36-38 and 46-47) so as to have speech recognition least affected by bit errors.

Referring to claim 5, the combination of Cong et al. with Li et al. does not specifically disclose a method of a speech recognition, wherein the bits most sensitive to error in a frame in a bitstream-based speech recognition system include the line spectrum pair information bits and the gain information bits.

However Maeda teaches that the bits most sensitive to error in a frame in a system include the line spectrum pair information bits and the gain information bits (col.2, ln.9; Table.1 and col.10, ln.10-15).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention to modify the method of Cong et al. in view of Li et al. which able to create and detect an error by check code from the line spectrum pair information bits and the gain information bits in order to improve the audio quality as taught by Maeda against the transmission path error (col.1, ln.36-38 and 46-47) so as to have speech recognition least affected by bit errors.

### Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure Kushner et al. (U.S. Patent No. 5,617,509) teach to select a Hidden Markov Model that best matches a given sequence of feature observations.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to the examiner **Vincent V. Tran** whose E-mail address:

[Vincent.tran@USPTO.GOV](mailto:Vincent.tran@USPTO.GOV).

Phone number: (703) 305-1817

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Talivaldis Ivars Smits, can be reached on (703) 306-3011.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center 2600 receptionist whose telephone number is (703) 305-4700.

7. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

P.O. Box 1450

Alexandria, VA 22313-1450

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Or faxed to:

(703) 872-9314

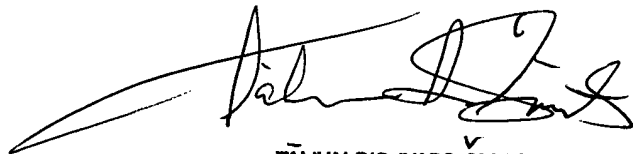
Hand-delivered responses should be brought to Crystal Park II, 2121

Crystal Dr, Arlington VA, Sixth Floor (Receptionist, Tel. No. 703-305-4700).

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VINCENT V. TRAN

Date: December 1, 2003

A handwritten signature in black ink, appearing to read 'Tālivaldis Nars Šmits', with a stylized flourish extending to the right.

TĀLIVALDIS NARS ŠMITS  
PRIMARY EXAMINER